Solving the VoIP 911 Location Challenge

A Blueprint for Identifying Residential Location

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Introductions:

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James Ross - VoIP / IPT Background

Solving the VoIP 911 Location Challenge

A Blueprint for Identifying Subscriber Location

This document examines the residential location challenge surrounding 911 in the VoIP world by identifying the types of IP Phones, telephone adapters, and mobile IP Phones in use, the VoIP operators, and the converged ip-based infrastructure they use to communicate across.

This presentation serves as a blueprint for a solution to accurately identify and provide subscriber locations for successful 911 emergency dispatches.

What is the 911 Location Challenge?

The location challenge is about trying to determine where a VoIP E911 emergency call is originating from. The traditional method is to have local agencies assign the physical address of a location to a specific phone line.

When a consumer dials E911 the RBOC or CLEC switch identifies the 911 digits and forwards the call to the E911 Tandem. The E911 Tandem queries Intrado using the Phone Number to determine the location information.

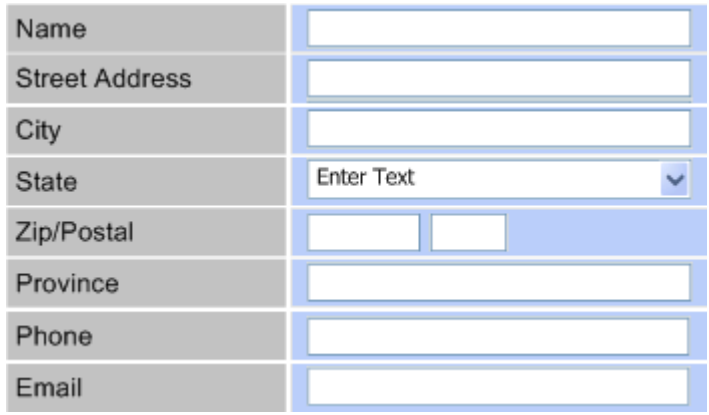
After a match is made with the ESN (Emergency Service Number) then the call is routed to the PSAP(Public Service Access Point) also known as 911 call center.

In the world of VoIP, calls are traveling virtually over the internet and therefore not tied to a traditional phone line. This creates a gap in location information and results in a failure to identify the E911 VoIP caller location.

The current FCC ruling requires VoIP operators to pass location information for their customers to 911 facilities. This information is given by the customer and may or may not be completely reliable.

The Current Solution

The VSP (**VoIP Service Provider)** relies heavily on subscribers updating their location information when they sign up for service. This information could be considered unreliable in both accuracy and legitimacy.



E=MC 2

When we dig deeper we find that a customer could accidentally enter the incorrect information or maliciously enter false information on their location. When the customer dials 911 the emergency service could be dispatched to the wrong location.

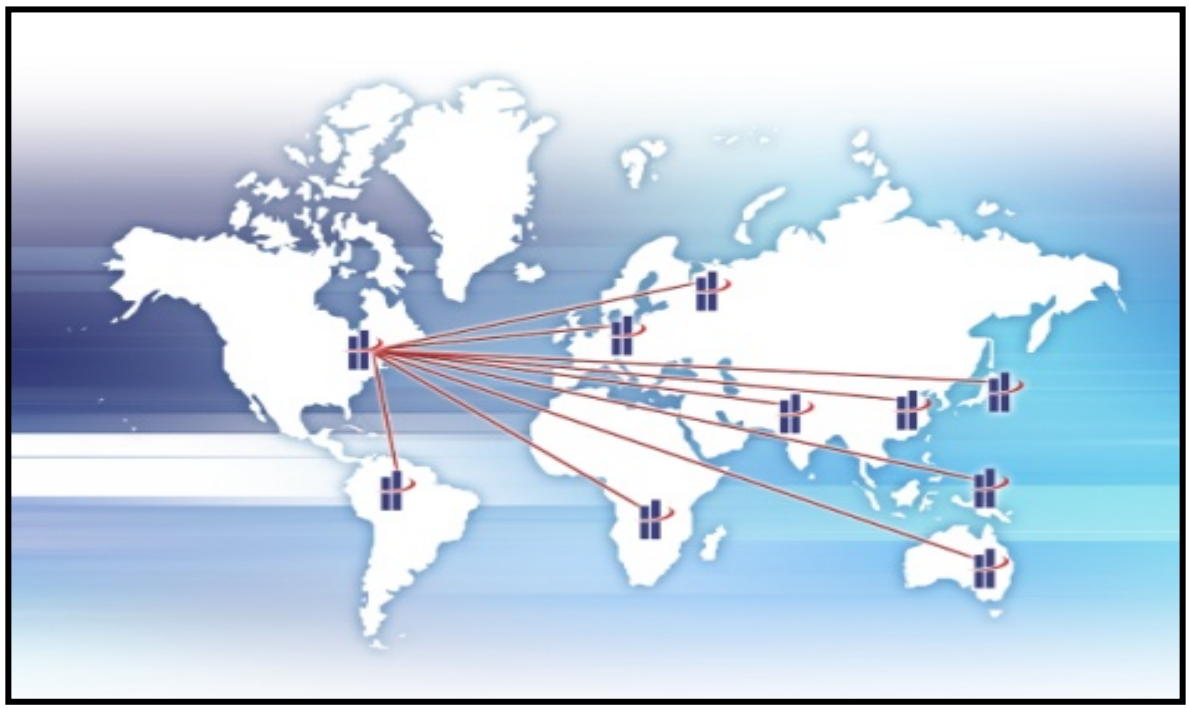
Furthermore a nomadic customer could update the correct address information and then travel to a new location with the VoIP device and dial 911. Since E911 will respond to the last address on file from the VoIP provider, the E911 emergency services would be dispatched to the wrong location.

As nomadic consumers travel with their VoIP device and we enter the world of Mobile IP phones, which move from hotspot to hotspot using different locations across the US and world, how do we accurately route a call to the appropriate E911 PSAP when the customer dials 911?

How do we ensure that only US located customers reach our E911 service?

Homeland Security Considerations

- **When a VoIP device** is taken outside of the US it can still be used to make calls to 911.
- **How can we trace** calls to 911 which originate from outside the United States?
- **How can we prevent** hoax calls which originate from outside the United States and could be designed to damage our 911 system?



What Needs To Be Fixed?

When a consumer dials 911 using a VoIP Telephony Adapter, IP Phone, Softphone, or WiFi Mobile phone we need to be able to locate the residential physical address of the caller at the time he/she makes the call.

When a nomadic consumer travels to a new residential location and dials 911 using a VoIP Telephony Adapter, IP Phone, Softphone, or WiFi Mobile phone we need to be able to locate the physical address of the caller at that time.

When a nomadic consumer travels to a new location outside the United States and dials 911 using a VoIP Telephony Adapter, IP Phone, Softphone, or WiFi Mobile phone we need to be able to identify the call as Out Of Country and handle accordingly.

The Blueprint

Defining the Solution

Solution Overview**:**
Initial Setup

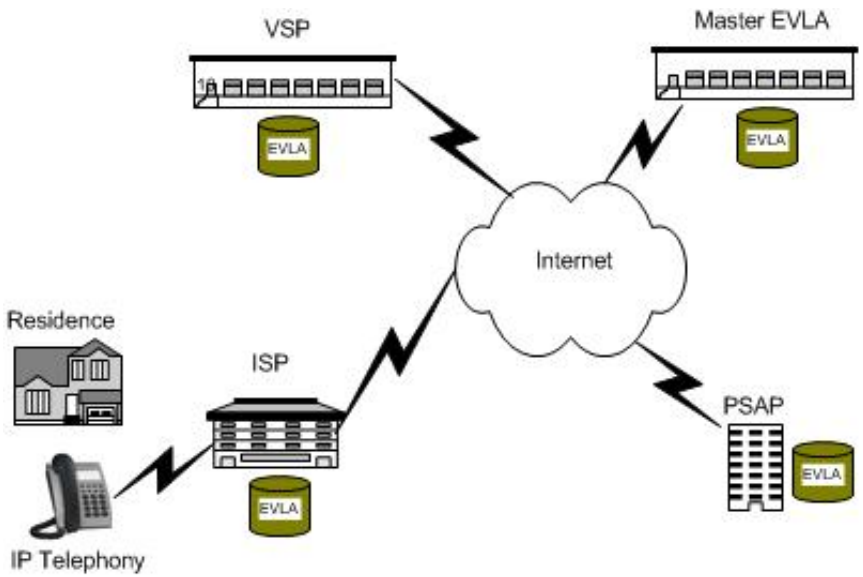
The EVLA (E-911 VoIP Location Appliance) solution could identify U.S. based locations and provide enhanced clarity of residential location information.

The **EVLA** is a unified solution and must be integrated with:

- ✓ **ISP's** (Internet Service Providers)
- ✓ **VSP's** (VoIP Service Providers)
- ✓ **PSAP** (Public Service Access Points)
  or Trunk Carrier
- ✓ **Master EVLA** (To Be Determined)

The **EVLA** is installed as follows:

1) **ISP's EVLA - Servant**
2) **VSP's EVLA – Servant**
3) **PSAP EVLA - Servant**
4) **Master EVLA - Master**



The Blueprint

Defining the Solution

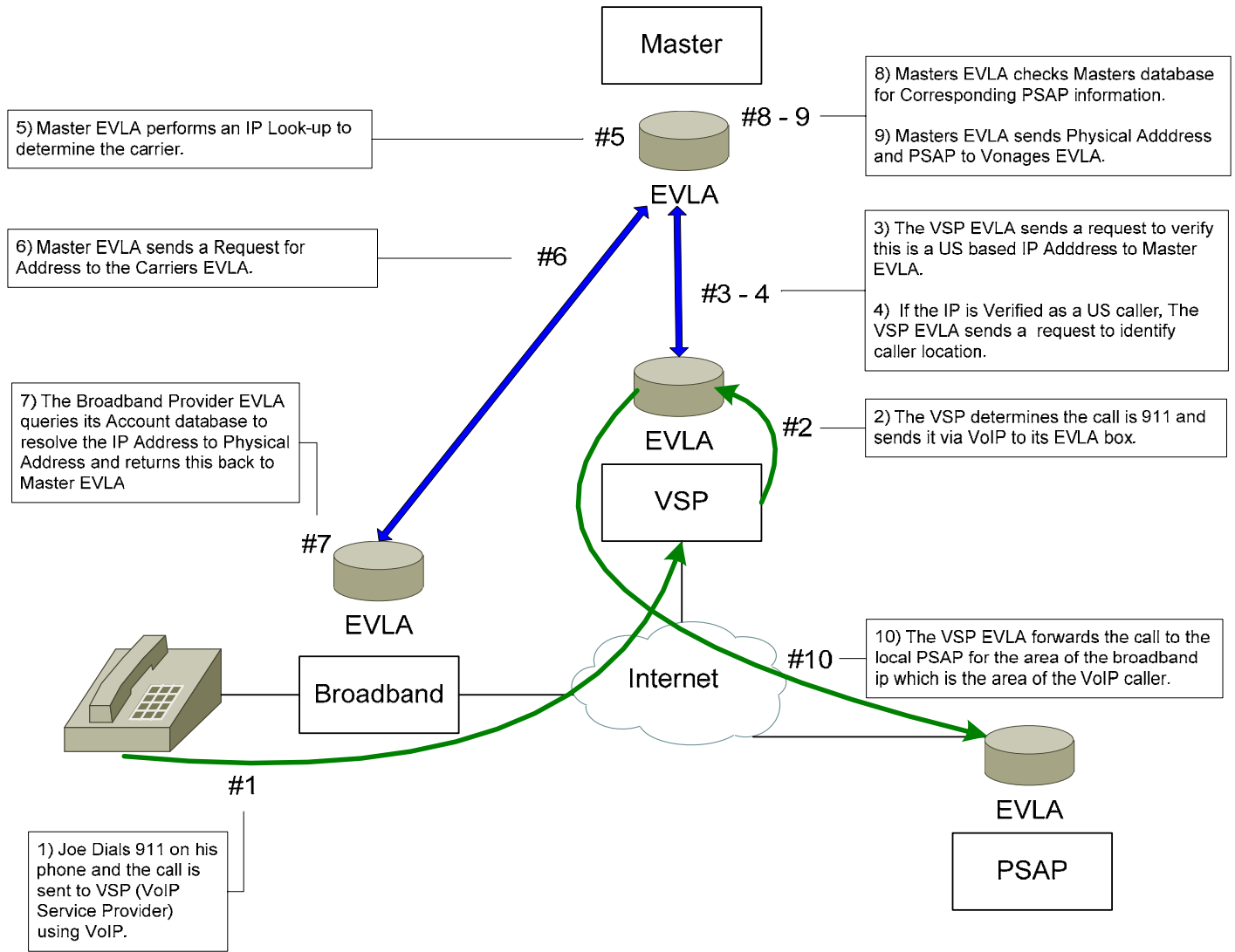
Solution Overview**:**
Customer Example 1

VoIP Customer Joe Smith resides in Orlando FL with a Miami 305 Telephone Number. He visits his friend Jeff in Dallas TX. Joe brings his VoIP Telephony Adapter and plugs it into his friends Broadband Internet Connection. An emergency arises and Joe dials 911 from his phone.

The Blueprint

Defining the Solution

Solution Overview:
Call Flow



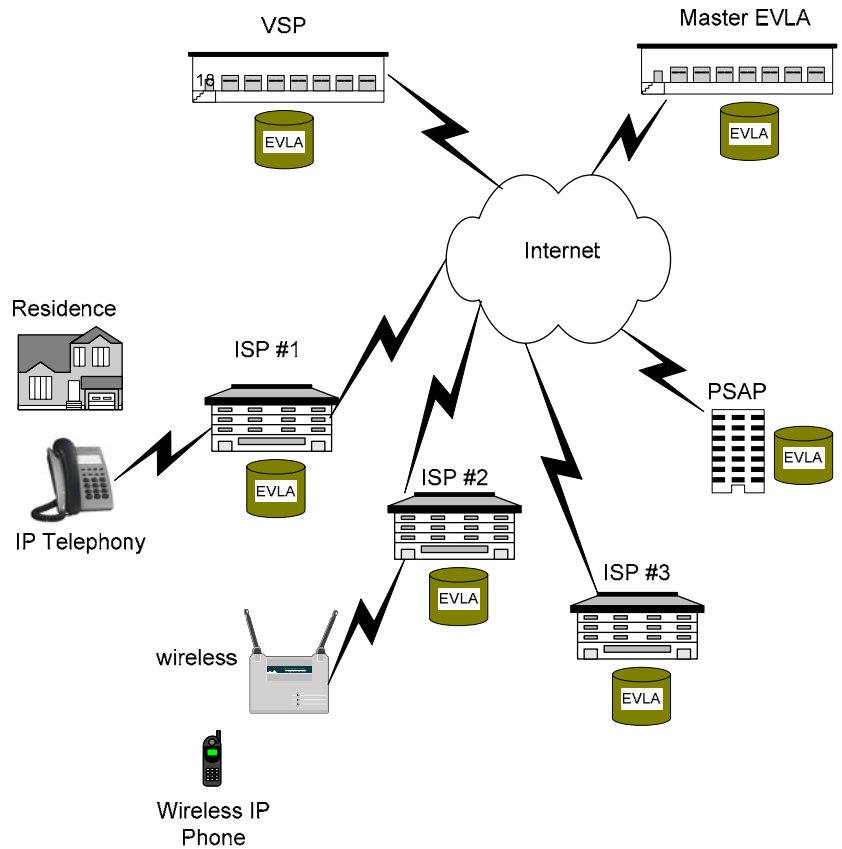
The Blueprint

Defining the Solution

Solution Overview**:**

Call Flow

Since the Master EVLA is contacting the ISP's account database, we are able to obtain the physical address and account owners information to determine the location and correct PSAP regardless of wired or wifi wireless connections.



Goal

Subscriber Location Identified

This presentation has provided a brief overview of a solution to solve challenges in the E911 Community, FCC location requirements, and possible assistance to our Homeland Security.

By identifying and resolving the ip address of a VoIP caller to a physical address from the service provider they accessed, you can effectively deliver accurate location information on almost each and every call.

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Questions?